SOIL AND WATER CONSERVATION IN COCONUT GROWING

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approach can contribute to better crops.

There is a popular impression that erosion does not occur on flat land, but this is much too sweeping as a generalisation, and is far from correct where the soil is left exposed and in a friable or easily-washed condition. A great deal of coconut is grown on relatively flat, sandy land on which grazing tends to stir up the soil and interfere with nature's efforts to keep it covered with grass and weeds. Actual erosion loss from Ceylon coconut groves has not been measured, but for somewhat similar soil and climate in Sholapur, Bombay, the losses have been recorded (Kanitkar's Indian Journal of Agricultural Science, XI of 1941).

These actual measurements showed that for a slope of 1 in 85, or 1.18 per cent. on black cotton soil, soil loss from slightly disturbed soil amounted to 52.3 tons per acre per annum, while intensive hot-weather ploughing raised this loss to 57.5 tons, as against a loss from natural vegetation of 0.2 tons per acre per annum. The parallel losses of water through surface run-off were in about the same ratio, the exposed and disturbed soil failing to hold back the water as it fell. The heaviest losses of both soil and water were for single intense storms of more than two inches of rain. Even allowing that the black cotton soil of Bombay is more easily transported than Ceylon's sandy soils, we are still faced with Kanitkar's conclusion : " The soil removed by rainfall erosion is richer in all plant food ingredients than the original soil. The average quantity of nitrogen lost in such eroded soil in a year is equivalent to that removed by 8 to 10 *jowar* (Sorghum) or bajra (kurakan) crops."

Compared with the black cotton soil of Bombay, the uppermost sandy layers of the Ceylon lowland soils are very poorly supplied with the colloidal clay fraction which helps to bind the sand particles into larger crumbs, so every severe storm takes away its toll of colloidal clay from the coconut plantations.

Save the rain water, and you save your soil, particularly that precious colloidal clay portion of it. The best way of conserving the rain as it falls is by one or other (or all) of the following :—

(i) By preserving the natural cover of grass and weeds—and this includes the control of grazing animals by fencing or tethering.

(ii) any form of scoop or trench *along the contour* which will stop surface run-off and force the water into the subsoil, preferably immediately behind each individual palm.

(iii) any additional ground cover which can be grown by cultivating the ground *along the contour* and between the rows of trees, on the lines of the rubber planters' cover crop.

(iv) any admixture of vegetable matter to improve the porosity and water-retentive capacity of the soil ; this includes dumping husks and leaves in trenches, and covering the soil with a layer of coir dust (as recently demonstrated at the Coconut Research Scheme, Bandirippuwa Estate, Lunuwila).

These recommendations are to some extent already in use on the sloping coconut plantations up-country, and I have noticed during my touring that there is a praiseworthy activity in many upland estates and small-holdings where pits behind individual trees, continuous contour ridges, and the digging in of husks and leaves are being fairly widely practised. What strikes me as a new-comer is the lack of such activity in the coastal coconut areas, where tapering, leaf discolouration, small nuts and other signs of malnutrition and moisture deficiency are apparent in the palms. It is in these coastal plantations also that uncontrolled village herds are allowed to wander at will. Grazing control is an essential part of good coconut husbandry.